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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,345	02/12/2002	Halbert Tam	AMAT/6075/CMP/CMP/RKK	5690

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APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER	
MCDONALD, SHANTESE L	
ART UNIT	**PAPER NUMBER**
3723	

DATE MAILED: 12/19/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
10/074,345	Halbert et al.
Examiner	**Art Unit**
McDonald, Shantese	3723

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Sep 22, 2003* .

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-36* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1-9,26-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Tsai et al.

Tsai et al. teaches a method of selectively removing a dielectric disposed on a substrate, 300, which includes a shallow trench isolation, (fig. 2), having a first dielectric material, which is silicon oxide, (col. 6, lines 62-63), and a second dielectric material disposed thereon, which is silicon nitride, (col. 6, line 55- col. 7, line 9). Tsai et al. also teaches positioning the substrate by means of a carousel, 60, in proximity with a fixed abrasive chemical mechanical polishing pad, (col. 3, lines 50-52), disposed on a rotatable platen, 30, and dispensing a polishing composition comprising between 1wt% and about 8 wt% glycine, (col. 5, lines 27-32), deionized water, (col. 6, lines 37-38), and potassium hydroxide as the pH adjusting agent, which adjusts the pH of the polishing composition to about 7 to 12, (col. 6, lines 4-6).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 11-25 and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai et al. in view of Kaisaki et al.

Tsai et al. teaches all the limitations of the claims except for the removal rate of the second dielectric material being less than the removal rate of the first dielectric material, and the removal rate ratio of the first material to the second material being between about 10:1 or greater or 100:1 to about 2000:1. Kaisaki et al. teaches the removal rate of the second dielectric material being less than the removal rate of the first dielectric material, (pg. 13, lines 13-18). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to provide the invention of Tsai et al. with the capability of having the removal rate of the second dielectric material being less than the removal rate of the first dielectric material, as taught by Kaisaki et al., in order to enhance the polishing capabilities.

It would have been further obvious to provide the invention of Tsai et al. with the removal rate ratio of the first material to the second material being between about 10:1 or greater or 100:1 to about 2000:1, since it has been held that where the general conditions of a claim are

disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

5. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai et al. in view of Arthanari et al.

Tsai et al. teaches all the limitations of the claims except for the substrate including a shallow trench isolation comprising first and second dielectric layers, wherein at least one of the materials comprises a nitride layer. Arthanari et al. teaches a shallow trench isolation comprising first and second dielectric layers, wherein at least one of the materials comprises a nitride layer, (col. 2, lines 52-55). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to provide the invention of Tsai et al. with a substrate including shallow trench isolation, as a matter of design choice.

Response to Arguments

6. Applicant's arguments filed 9/22/03 have been fully considered but they are not persuasive. In regards to the applicants arguments in reference to claims 1-8 and 26-29, that the Tsai et al. reference does not teach, show or suggest a composition for removing dielectric materials that excludes abrasives and includes at least one organic compound selected from a group of amino acids, at least one pH adjusting agent and water. The Examiner disagrees with this, the reference does indeed teach dispensing a polishing composition comprising between 1wt% and about 8 wt% glycine, (col. 5, lines 27-32), deionized water, (col. 6, lines 37-38), and

potassium hydroxide as the pH adjusting agent, which adjusts the pH of the polishing composition to about 7 to 12, (col. 6, lines 4-6), the reference also teaches by using a fixed abrasive pad, the slurry does not contain abrasives, (col. 3, lines 50-=52). In reference to the argument that the Kaisaki et al. reference does not teach, show or suggest a method of selectively removing a dielectric material having a first dielectric material and a second dielectric material and the removal rates being different between the two materials. The Examiner disagrees, the Kaisaki et al. reference does teach this on (page 13, lines 13-18). It states that the has different removal rates and the second is slower than the first. In reference to the argument that the Tsai et al. referee does not teach a polishing system having a controller configured to deliver a polishing composition, the Examiner disagrees. The Tsai reference states that the CMP process equipment is the Mirra CMP System, as shown and described in U.S. Pat. No. 5,738,574, (col. 3, lines 56-64), and in that patent, it states that the CMP system is fully automated, therefore it must contain a control system.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shantese McDonald whose telephone number is (703) 308-8722.

Joseph J. Hail, III
Supervisory Patent Examiner
Technology Center 3700

S.L.M.

December 14, 2003